

## Lesson Plan 1: Tales, Tasks, Tools, and Talk

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**Article:** “Tales, Tasks, Tools, and Talk.” *Teaching Children Mathematics* 19, no. 5 (December 2012–January 2013): 316–23

**Grade Levels:** 2–5

**CCSSM Domain:** Measurement and Data

- Measure and estimate lengths in standard units. (2.MD)
- Represent and interpret data. (2.MD)

**Mathematical Practices:**

- Reason abstractly and quantitatively. (MP.2)
- Use appropriate tools strategically. (MP.5)
- Attend to precision. (MP.6)

National Governors Association Center for Best Practices and the Council of Chief State School Officers  
(NGA Center and CCSSO) 2010

**Related children’s literature:** “One Inch Tall” from *Where the Sidewalk Ends*, written and illustrated by Shel Silverstein

**Materials:**

- Copy of “One Inch Tall” by Shel Silverstein for each student (or group)
- Activity Sheet 1: Metric Measurement Poems for each student (or group)
- Tape measures in customary and metric (SI) units
- Several rulers with both inches and centimeters per group
- Meter stick, yardstick, or both (extension)

**Discussion of the Mathematics**

The purpose of this activity is to engage students in measurement with standard U.S. customary and metric units in a creative way. To do this, we ask the learners to consider the objects, events, and circumstances they encounter on a daily basis. Because the expectation for using and understanding standard units of measurement first appears in grade 2 (NGA Center and CCSSO 2010, p. 17), the integration of measurement, poetry, the writing process, and children’s imagination provides a meaningful context for students to gain experience and confidence with inches and centimeters. As students assume the role of poet, the guiding questions of the Metric Measurement Poem Activity Sheet encourage them to explore, to visualize, and to articulate their thinking about what is (and what could be) possible if their height was suddenly reduced to one inch, and then to one centimeter. These personal frames of reference are invaluable as students contextualize and construct their understanding of standard units through the acts of estimating and measuring.

### **Highlighting the Mathematical Practices**

*Reason abstractly and quantitatively* and *Attend to precision*. Once students are able to recognize the need for standard units of measurement, it becomes incumbent upon early childhood teachers to provide meaningful, relevant, and contextual experiences for students to gain familiarity in measuring length. As students explore their immediate surroundings through inches and centimeters, the data students collect, record, discuss, and share provides formative assessment information about not only the processes of measuring attributes with iterative units, but also about students' developing more precise references for these measures. As students experiment in the creation of a narrative poem based on authentic data, the expanding vocabulary of developing writers, and the figurative language of poetry, students take ownership of their learning as they are challenged to present their accurate recording of data in precise, descriptive, and creative ways.

### **Launching the Activity**

- In the context of a morning meeting or a whole-class read-aloud, connect Shel Silverstein's poem, "One Inch Tall," to students' prior knowledge and understanding of one inch. Students could be asked to show with their fingers an interval of one inch and to list common items within the classroom that have a length of about one inch. To engage students' imagination, ask students: *In what ways would your daily life be affected if each of you were only one inch tall? What activities would be difficult or easy to do? Which aspects of your life would need to change in order to accommodate your new height?* The students' brainstormed responses should be recorded on large chart paper for future reference in their writing process.
- Each student should receive a copy of "One Inch Tall," or the poem could be displayed on a document camera or a SmartBoard. Begin the lesson by reading the poem aloud to the students. Ask them to identify how Shel Silverstein has used measurement to describe the objects and events in the poem. *Do these objects and events seem reasonable to the students? How are the objects and events in the poem similar and different to the students' brainstormed list?*
- Depending on the students' exposure and experience with the metric system, they could be asked if they know any other units to measure length. If the terms *meter* and *centimeter* are unfamiliar to the students, the teacher will want to provide a meaningful introduction, background information, frames of reference, and context to these additional standard units of measurement. The students should be given additional time to compare and contrast standard metric units to an inch, a foot, and a yard.

### **During the Activity**

- Distribute the Metric Measurement Poems Activity Sheet and centimeter rulers to each student or group. Re-read "One Inch Tall," and inform the students that they will be challenged to adapt the poem into metric units based on data they collect and their own imaginations. Ask the students what measurement comparisons Shel Silverstein has made. Add these comments to the brainstormed list compiled in **Launching the Activity**. Ask whether there are any additional measurements students think should be added to their list after a second reading of this poem.
- In the data collection phase of the activity, students should begin by measuring their own height using tape measures in both customary and metric units. This information should be accurately recorded on the students' Metric Measurement Poems Activity Sheet.

- Students should be given an adequate time to use Activity Sheet 1 and their centimeter rulers to explore, estimate, and measure the lengths of common objects and artifacts from the immediate classroom surroundings that they feel should be included in their description of their new height. The teacher should monitor students' responses and measurement techniques to ascertain their accuracy and understanding. You or a classroom aide can discuss the students' quantitative findings in small groups to validate the reasonableness of their data before asking the students to create their own measurement poem. Appropriate questions to monitor and assess students' understanding could be: *How did you measure that object? Which attributes of the classroom objects did you measure? How do you know that this attribute measures \_\_\_\_ centimeters?*
- To facilitate the creative process, students should be given adequate time to imagine and to collaboratively consider what it would be like to be one centimeter tall. Scaffolding questions to consider may include: *How would you get to school? What would you be able to eat? What objects would be light or heavy for you? What could you use for clothes? How would you do your schoolwork? What could you sleep on? What would be more dangerous for you? Where would you play? Could you have a pet? What kind? What would be exciting for you to do?*
- Using a writer's workshop format (Atwell 1998), have students provide constructive feedback to each other's first draft of a Metric Measurement Poem that follows the model of "One Inch Tall." Students may work in peer-feedback groups or have one-on-one conferences with you to adapt and revise their Metric Measurement Poem for reasonableness of data, sequence of events, clarity, descriptive language, and appropriate mechanics.
- Students can illustrate their later drafts of their Metric Measurement Poem with relevant graphics and pictures.
- Students should be given the opportunity to share their Metric Measurement Poem with the classroom community and to receive meaningful feedback from their peers.

### **Extending the Activity**

- As this activity involves the students "shrinking" to a height of one inch or one centimeter, this activity can be easily extended to structure students' thinking about "stretching" to larger standard units of measurement in both systems (e.g., foot, yard, decimeter, meter, or kilometer).
- Have the students edit and revise their Metric Measurement Poems using technology to create a class book or a colorful classroom or hallway display of student work. This book or display can be made available for parent night, for the school principal, and for community stakeholders as a viable educational artifact.
- This activity could be easily adapted to incorporate other attributes of standard measurement such as weight and capacity in later grades.

### **Follow-Up Activity**

- Younger U.S. students may not have a strong understanding of standard units within the metric system. As intended, this activity targets the personal and flexible understanding of measurement in metric units. Similarly, international students may be more familiar with metric units and should be given more opportunities to gain familiarity with U.S. measurement units outside of those concerning length (e.g., pound, quart, and gallon). However, students proficient with English should be given more exposure to metric units.

- To connect with home and families, students could be encouraged to further their own creative writing experiences by extending or by transforming their poem into other literary forms such as paragraphs, blogs, short stories, and one-act plays.

### References

Atwell, Nancie. 1988. *In the Middle: New Understandings about Writing, Reading, and Learning*. Portsmouth, NH: Heinemann.

Franco, Betsy. 2006. *Math Poetry: Linking Language and Math in a Fresh Way*. Culver City, CA: Good Year Books.

McKeny, Timothy S., and Gregory D. Foley. 2012/2013. "Tales, tasks, tools, and talk." *Teaching Children Mathematics* 19 (December–January): 316–23.

National Governors Association Center for Best Practices and the Council of Chief State School Officers (NGA Center and CCSSO). 2010. *Common Core State Standards for Mathematics*. Washington, D.C.: NGA Center and CCSSO. <http://www.corestandards.org>.

Silverstein, Shel. 2004. "One Inch Tall," in *Where the Sidewalk Ends*. New York: Harper Collins.